What is claimed is:

1. A network system, comprising:

a communication line having a predetermined bandwidth;

a terminal unit that is connected to said communication line

and receives data through the communication line;

a first unit that includes said terminal unit through said

communication line and repeats data to be communicated between said

terminal unit and said first unit; and

a second unit that sends data to said terminal unit through

said first unit according to a bandwidth of said terminal unit that

is estimated based on a data delay time of said communication line.

2. A network system, comprising:

a communication line having a predetermined bandwidth;

a terminal unit that is connected to said communication line

and receives data through the communication line;

a first unit that includes said terminal unit through said

communication line and repeats data to be communicated between said

terminal unit and said first unit; and

a second unit that comprises a first measuring means that is

connected to said first unit and measures a first round trip time

as a data delay time between said terminal unit and said second

unit, a second measuring means that measures a second round trip

time as a data delay time between said first unit and said second

unit, a communication line delay calculating means that calculates

the data delay time of said communication line from said first and

second round trip times measured by said first and second measuring

16 means, respectively, a communication line bandwidth storing means

17 that stores a bandwidth of said communication line corresponding

18 to the data delay time of said communication line, and a data sending

19 means that sends data to said terminal unit according to the bandwidth

20 of said communication line stored in said communication line bandwidth

21 storing means corresponding to the data delay time calculated by

22 said communication line delay calculating means.

1 3. A network system, comprising:

2 a terminal unit that sends an echo response with a predetermined

3 counter value to the sender of a predetermined echo request;

4 an access server that includes said terminal unit through a

5 communication line and repeats data and said echo request to be

6 communicated between said terminal unit and said access sever,

7 decrements a count value of the echo request every time repeating

8 the echo request, and, when the count value becomes zero, sends

9 an echo response to the sender of the echo request;

10 one or more routers that are connected to said access server,

11 repeats data and said echo request to be communicated between said

12 terminal unit and said routers, decrements a count value of the

13 echo request every time repeating the echo request, and, when the

14 count value becomes zero, sends an echo response to the sender of

15 the echo request; and

16 an application server that is connected to any one of said

17 routers, said application server comprising a first echo request

18 sending means that sends a first echo request to said terminal unit,

19 a first echo response receiving means that receives a first echo

20 response in reply to the first echo request from said terminal unit,

21 a first measuring means that measures a first round trip time as

22 a data delay time between said terminal unit and said application

23 server, said first round trip time being an elapsed time from send

24 time of the first echo request until receive time of the first echo

25 response, an estimating means that estimates the number of routers

26 up to said access server from a counter value of the first echo

27 response received by said first echo response receiving means, a

28 second echo request sending means that sends a second echo request

29 with a count value that is set to be the number of routers estimated

30 by said estimating means to said terminal unit, a second echo response

31 receiving means that receives a second echo response in reply to

32 the second echo request, a second measuring means that measures

33 a second round trip time as a data delay time between said access

34 server and said application server, said second round trip time

35 being an elapsed time from send time of the second echo request

36 until receive time of the second echo response, a communication

37 line delay calculating means that calculates a data delay time of

38 said communication line from the first and second round trip times

39 measured by said first and second measuring means, respectively,

40 a communication line bandwidth storing means that stores a bandwidth

41 of said communication line corresponding to the data delay time

42 of said communication line, and a data sending means that sends

43 data to said terminal unit according to the bandwidth of said

44 communication line stored in said communication line bandwidth storing

45 means corresponding to the data delay time calculated by said

46 communication line delay calculating means.

1   4. A network system, according to claim 3, wherein:

2   said application server comprises an echo response judging

3   means that judges whether the second echo response received by said

4   second echo response receiving means is sent from said terminal

5   unit or not, and a re-sending means that, when said echo response

6   judging means judges that the second echo response received by said

7   second echo response receiving means is sent from said terminal

8   unit, makes said second echo request sending means send another

9   second echo request with a count value that is set to be less than

10   the number of routers estimated by said estimating means to said

11   terminal unit.

1   5. A network system, according to claim 3, wherein:

2   said application server comprises a data sending means that,

3   a data delay time of the communication line calculated by said

4   communication line delay calculating means is lager than a

5   predetermined threshold value, sends data to said terminal unit

6   based on a bandwidth stored in said communication line bandwidth

7   storing means in accordance with the data delay time, and, when

8   the data delay time of the communication line calculated is smaller

9   than the predetermined threshold value, sends data to said terminal

10   unit at a maximum bandwidth in the communication line up to said

11   terminal unit.

1   6. A network system, according to claim 4, wherein:

2   said application server comprises a data sending means that,

3   a data delay time of the communication line calculated by said

4   communication line delay calculating means is lager than a

5   predetermined threshold value, sends data to said terminal unit

6   based on a bandwidth stored in said communication line bandwidth

7   storing means in accordance with the data delay time, and, when

8   the data delay time of the communication line calculated is smaller

9   than the predetermined threshold value, sends data to said terminal

10   unit at a maximum bandwidth in the communication line up to said

11   terminal unit.

1   7. A network system, according to claim 3, wherein:

2   said terminal unit comprises a connection request sending means

3   that sends a connection request to said application server prior

4   to receiving data from said application server, and a responding

5   means that receives a connection approval in reply to the connection

6   request as the first echo request and sends a response in reply

7   to the connection approval as the first echo response; and

8   said application server comprises a transmitting means that

9   sends the connection approval in reply to the connection request

10   sent from said connection request sending means as the first echo

11   request, and a communication line setting means that receives the

12   response sent from said responding means as the first echo response

13   and sets a communication line between said terminal unit and said

14   application server.

1   8. A network system, according to claim 4, wherein:

2   said terminal unit comprises a connection request sending means

3   that sends a connection request to said application server prior

4   to receiving data from said application server, and a responding

5   means that receives a connection approval in reply to the connection

6   request as the first echo request and sends a response in reply

7   to the connection approval as the first echo response; and

8   said application server comprises a transmitting means that

9   sends the connection approval in reply to the connection request

10 sent from said connection request sending means as the first echo

11 request, and a communication line setting means that receives the

12 response sent from said responding means as the first echo response

13 and sets a communication line between said terminal unit and said

14 application server.

1   9. A network system, according to claim 5, wherein:

2   said terminal unit comprises a connection request sending means

3   that sends a connection request to said application server prior

4   to receiving data from said application server, and a responding

5   means that receives a connection approval in reply to the connection

6   request as the first echo request and sends a response in reply

7   to the connection approval as the first echo response; and

8   said application server comprises a transmitting means that

9   sends the connection approval in reply to the connection request

10 sent from said connection request sending means as the first echo

11 request, and a communication line setting means that receives the

12 response sent from said responding means as the first echo response

13 and sets a communication line between said terminal unit and said

14 application server.